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ABSTRACT

To find an area of weakness in disabled readers that might profitably be strengthened, the level of language development of disabled secondary readers was compared with that of competent secondary readers. The group of disabled readers used in the study consisted of 20 high school students in a corrective reading class; the comparison group consisted of 22 members of a class for "highly motivated" students. Reading levels, parental educational levels, and parental occupational levels were all higher for the able than for the disabled group. Students were tested on their comprehension of five linguistic structures identified by Carol Chomsky as representing five developmental stages in acquisition of syntax. Analysis of the results revealed that 10% of the disabled readers and 55% of the able readers comprehended all five constructions, as compared with 11% of Chomsky's subjects (children aged five through ten years old). The fact that no significant difference in performance was observed between the disabled readers and the children in Chomsky's sample suggests that disabled secondary readers may suffer from a low level of language development, while the differences in socioeconomic level between the two adolescent groups indicates a correlation between socioeconomic status and language development. It can be hypothesized that strengthening students' level of language development will also strengthen their reading ability. (GT)

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THE LANGUAGE DEVELOPMENT OF DISABLED SECONDARY READERS: II

(for I see ED 141 763)

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THE LANGUAGE DEVELOPMENT OF DISABLED SECONDARY READERS: II

Theories of reading have been profoundly influenced by Noam Chomsky's work published in the 1950's and 1960's on how humans acquire the rules of language. Chomsky focused attention not on language performance but on the language process as it works in a person's mind. Subsequently, psycholinguists like Frank Smith and Kenneth Goodman, influenced by Chomsky's ideas on language acquisition, developed psycholinguistic models of reading, considering how the human mind works while reading (psychology) and how human language works (linguistics). In these models reading is looked upon as part of the total language process, and emphasis is shifted from the written text to the reader's knowledge of written language and to his general knowledge of the world. Reading becomes an active internal process as the brain bridges surface structure and deep structure with syntactical rules (Cooper and Petrosky, 1976). In theory, then, one could postulate a close relationship between a person's level of language development and his reading ability. It seems logical that good readers would have a strong knowledge of syntax and that poor readers would not have this knowledge.

Recent research in this area seems to support theory. For instance, Walter Loban, in his monumental report Language Development: Kindergarten through Grade Twelve (1976), showed that decreased language ability accompanies low reading ability at all levels. On many different measures, low readers are low in average number of words per communication unit, syntactical elaboration of subject and predicate, number of grammatical transformations, proportion of mazes to total speech, height and range of vocabulary, use of connectors, number of dependent clauses, and use of adjectival clauses.

Carol Chomsky, in her investigation of developmental linguistic stages (1972), also studied the reading background of her subjects, aged five to ten years.

She obtained her information from questionnaires to children and parents, records kept at home of reading, recall of books read and heard, and calculation of the complexity of independent reading and listening. She found several positive relationships between reading exposure and linguistic stages: individuals at the top linguistic stage are strikingly characterized by having read (or listened to) a larger number of books, having taken out more books on regular visits to the public library, and having read more complex materials.

Van Metre (1974), using some of Chomsky's measures of linguistic maturity, compared similar groups of high and low bilingual and monolingual third-grade readers. The high groups of both bilinguals and monolinguals scored significantly better in linguistic maturity than the low bilinguals and low monolinguals. Van Metre's conclusion was that knowledge of syntax does play a role in the reading process. Goldman (1976) used one of Chomsky's constructions to compare the listening and reading comprehension of ninety-six third, fourth, and fifth graders. Since the low skill group did significantly worse than the high skill group on the listening task, this researcher concluded that "low skill readers, in addition to problems arising from the graphic input per se, also have less well developed general language comprehension skills" (p. 135).

Arthur Applebee has summarized work on the relationships between reading and writing (1977). One study (Kuntz, 1975) sampled ninety-six seventh graders and found "a close and reliable" relationship between reading achievement and written syntactic attainment. The Goodmans' work with miscue analysis has shown that better readers consistently bring knowledge of syntax to bear on their reading, as reflected in the types of miscues which they tend to make (Allen and Watson, 1976). Takahashi (1975) found a significent difference between the performance of slow ninth grade readers and good ninth grade readers on a test of sentence meaning.

Frank Vellutino (1977), in his overview of research on why children can't read , argues for a "verbal-deficit" hypothesis as the most convincing explanation of reading disability. He even suggests that problems in language cause a reader to code and synthesize information more slowly and this "lag" in turn explains problems in visual perception, intersensory integration, and temporal-order perception. He cites many research reports suggesting that "severely impaired readers are not as proficient as other readers in their knowledge of words, syntactic facility, and verbal fluency in general" (p. 345). For instance, several studies (Rabinovitch, 1959, 1968; Belmont and Birch, 1966, Huelsman, 1970; Lyle and Goyen, 1968) have compared the performances of poor and average readers on the subtests of the Wechsler Intelligence Scale for Children (WISC). Poor readers consistently performed below average readers on the verbal scale but were generally comparable on the performance scale. Five other studies (deHirsch, Jansky, and Langford, 1966; Jansky, 1973; Satz and Friel, 1974; Satz, Friel, and Rudegeair, 1974a and b) showed that children with verbal deficiencies before entering school are the ones who have reading difficulties later. Two additional studies (Fry, 1967; Schulte, 1967), contrasting oral language samples of second graders, found that average readers are more sophisticated than poor readers in linguistic skills such as verbal fluency, speaking vocabularies, organizational and integrative skills, abstract usages, grammar, and complexity of sentence structure. Finally, the performances of average readers and poor readers aged seven to eight years have been compared on a battery of tests measuring a variety of syntactic skills (Vogel, 1974). On seven of the nine measures there was a significant difference in favor of the average readers, who performed better on five separate tests: comprehension of syntax, repetition of sentences, morphological usages, oral cloze tests, and recognition of melody.

There would seem, therefore, to be a growing body of evidence indicating that good readers have a strong knowledge of syntax and poor readers do not. In an effort to explore further the reading process as it works in readers' minds, and thus to find an area of weakness which might profitably be strengthened, this writer investigated the level of language development displayed by disabled secondary readers and compared it with the level of language development displayed by competent secondary readers. The measure of syntactic knowledge, Carol Chomsky's five stages of language development (1972), is used here for the first time with teen-agers; the results should corroborate the close relationship between language development and reading, leading perhaps to new suggestions for the teaching of reading.

METHOD

Subjects. One group of adolescents utilized in this study consisted of twenty members of the Corrective Reading class in a high school in Aurora, Illinois, an industrial city of 80,000 forty miles west of Chicago. These students had been placed in this class on the basis of their eighth-grade scores on the Gates-MacGinitie Reading Test, Survey E, which had to be below fifth grade in both comprehension and vocabulary. On this same test after twelve weeks of this reading class their scores ranged from grade three to grade six in vocabulary and from grade two to grade eight in comprehension. The mean vocabulary score was 5.0 and the mean comprehension score 4.9. Sixteen of these students were ninth-graders and four were tenth-graders; three of the subjects were black males, three were Hispanic males, five were Caucasian females, nine were Caucasian males. Their ages ranged from fourteen years and one month (14.1) to fifteen years and eleven months (15.11). Seventy percent of the parents of these students had not graduated from high school; only two parents had education beyond high school, one at a trade school and one

some evening college classes. Fifty percent of the parents were unskilled laborers (factory assembly line worker, office clerk, janitor, housekeeper, baby sitter, cafeteria worker), 25 percent were skilled laborers (electrician, machinist, welder, roofer, auto mechanic, truck driver), 10 percent owned small businesses, and 15 percent were unemployed.

The comparison group consisted of twenty-two members of a class entitled Fundamentals of English II in the same high school. This is an accelerated section of a class required of all entering freshmen, involving intensive work in grammar, mechanics, sentence patterns, paragraph development, and essay writing. This accelerated level is available for "highly motivated" students. On the same Gates-MacGinitie Reading Test administered in the second quarter of the school year, the scores of these students ranged from grade five to college level in both vocabulary and comprehension, with a mean vocabulary score of 11.5 and a mean comprehension score of better than 12.6. On the vocabulary subtest, 19 percent scored below grade level, 14 percent scored at grade level, and 67 percent scored above grade level, with 49 percent of the latter group scoring higher than the published norms (12.7). On the comprehension subtest, 10 percent scored below grade level, 5 percent scored at grade level, and 86 percent scored above grade level, with 61 percent of the latter scoring higher than the published norms (12.6). All these students were ninth-graders and all were Caucasian; eight were males, fourteen females. Their ages ranged from fourteen years and one month (14.1) to fifteen years and two months (15.2). All their parents were high school graduates, 20 percent of the parents had some college, 34 percent were college graduates, and 16 percent had education beyond the baccalaureate level. Two percent of the parents were unskilled laborers (office clerk), 11 percent were skilled laborers (carpenter, electrician), 41 percent were business executives (owner of own company, officer of a company, or trained white collar worker), 30 percent were professionals (physician, teacher, nurse, certified public accountant), and 16 percent were housewives. Table 1

summarizes the preceding information about these two groups.

Insert Table 1 about here

A special word might be said about the IQ scores of the two groups of adolescents, with inferences about the relationship between IQ and language development. The IQ's of the Corrective Readers ranged from 70 to 107, with 50 percent falling between 85 and 100. The IQ's of the students in Fundamentals of English ranged from 90 to 134, with 59 percent falling between 110 and 130. However, the significance of this difference in IQ scores is unclear for two reasons. First, the scores came from the students' cumulative folders and are suspect because they are based on group intelligence tests measuring, at least in part, reading or verbal skills (California Test of Mental Maturity, Lorge Thorndike Intelligence Tests, Otis-Lennon Mental Ability Test). Second, the relation between IQ and language development has not been absolutely determined. Although Chomsky (1972) found that IQ related positively to linguistic development, other evidence hints otherwise. Goldman's comparison (1976) of the listening and reading comprehension of third, fourth, and fifth graders on one of Chomsky's constructions came to this conclusion: reading skill is a significantly better predictor of performance on both the listening and reading comprehension of this construction than either age or IQ. In fact, the researcher states that "it seems unlikely that a child's age or IQ alone can predict his linguistic ability" (pp. 140-141). Another piece of evidence is that poor readers perform lower than average readers on the WISC subtest of "verbal intelligence" but the two groups are comparable on the scale of "nonverbal intelligence" (Vellutino, 1977). Finally, Frank O'Hare, in his study of the impact of sentence-combining on seventh-graders' writing, found that even experimental students with low IQ's made significant gains in syntactic maturity (1973).

Description of Experimental Material. Carol Chomsky has done pioneering work in language acquisition and language development. In the course of her work with children from the ages of five to ten, she has identified five developmental stages in acquisition of syntax (Chomsky, 1972). All the children with whom she has worked seem to pass through the same stages of development as they progress into mature users of language, although there is considerable variation in age of acquisition: there is generally a gradual improvement as children increase in age, but some children of ten were several stages behind others aged seven.

The five syntactic structures representing five developmental stages are interesting, exceptional, and infrequent. They are exemplified, in increasing order of difficulty, by these five sentences:

1. The doll is easy to see.
2. The soldier promises the bird to stand on the book.
3. The girl asks the boy what to paint.
4. Mother scolded Gloria for answering the phone, and I would have done the same.
5. Mother scolded Gloria for answering the phone, although I would have done the same.

In order to comprehend these five structures, the listener (or the reader) has to fill in a missing noun or verb phrase at variance with the general tendency of the English language called the Minimum Distance Principle. This principle describes a linguistic strategy for determining the correct subject of a complement verb phrase or for identifying a missing verb. The usual strategy is to choose the nearest candidate, not the furthest.

The following descriptions of the previously mentioned five syntactic structures should clarify this Minimum Distance Principle. In the sentence representing stage 1 in Chomsky's developmental sequence, "The doll is easy to see," doll is the object of the infinitive and the subject is someone else which must be supplied

at the meaning level. The more usual structure is "The doll is eager to see." Here doll is the subject of the sentence and also the subject of the infinitive to see.

Chomsky's stage 2 is represented by the sentence "The soldier promises the bird to stand on the book." In this case the subject of the infinitive to stand is not expressed and it must be understood not as the closest noun (the bird) but the furthest (the soldier); the general rule of the Minimum Distance Principle must be discarded and the exception substituted. In contrast to this sentence is "The soldier tells the bird to stand on the book." Here the bird (the closest noun) is to stand on the book. This is the common structure and works in the case of almost all verbs in English besides tell (persuade, urge, want, expect, order, hire, and like).

Chomsky's stage 3 becomes more complicated, because the verb ask not only breaks the general rule but is also inconsistent. Compare "The girl asks the boy to leave," " The girl tells the boy what to paint," and "The girl asks the boy what to paint." In the first two sentences the nearest noun (the boy) is indeed the subject of the infinitive to leave or the complement verb phrase what to paint. But in the last sentence the missing subject must be supplied by the mature user of language as she; i.e., "The girl asks the boy what to paint" means "The girl asks the boy what she should paint."

Chomsky's last two stages, 4 and 5, look very similar: "Mother scolded Gloria for answering the phone, and I would have done the same," and "Mother scolded Gloria for answering the phone, although I would have done the same." In each case the listener (or reader) must fill in what "I would have done." In the first case the Minimum Distance Principle must be discarded and the far candidate for the same must be chosen: the same is scolded. But in the second case a specific knowledge of the although construction is needed in order to discard the exception to the Minimum Distance Principle which has just been used with and. Here what "I would have done" is answer the phone, the nearest candidate. This although struc-

ture represents the most difficult and sophisticated of the developmental stages in acquisition of syntax.

Procedure. The procedure followed in the testing for this study was similar to that described in Chomsky's report (1972). For stage 1, "The doll is easy to see," a doll, with eyes that close, was placed lying down in front of the subject and examiner. The subject was asked if the doll was easy or hard to see, and then why and how the doll could be made hard to see. Stage 2, "The soldier promises the bird to stand on the book," required the subject to manipulate small figures, a soldier and a bird (for younger children Chomsky used figures of Donald Duck and Bozo). First there were two practice sentences, which the subjects could read and/or listen to, using the verbs want and decide, and then five sentences with promise. Four out of the five sentences had to be understood correctly for success in this stage.

Stage 3, as represented by the sentence "The girl asks the boy what to paint," was tested in two parts, one using conversation and the other using pictures. In the conversation part the subject was instructed to ask a partner five things and tell the partner five things (the difference between "Ask John what to feed the dog" and "Tell John what to feed the dog"). Four out of five correct responses on the ask construction were necessary for success. In the picture part of this stage, the subject was shown two pairs of pictures for two sentences: "Which picture shows the girl asking the boy what to paint?" (followed by "What is she saying to him?") and "Which picture shows the boy asking the girl what shoes to wear?" (followed by "What is he saying to her?"). Since interpretation of the pictures seems easier than the conversation part, all responses about the pictures had to be correct for success in this stage.

For stage 4, "Mother scolded Gloria for answering the phone, and I would have done the same," the subjects had two sentences to read and/or listen to and then they had to say what "I would have done." For stage 5, "Mother scolded Gloria for answering the phone, although I would have done the same," the subjects again had

to understand two sentences after they had indicated that they understood although in general. In this case they had to know the specific although rule so they could distinguish between the two similar constructions differing only in the words and and although.

RESULTS

Table 2 summarizes the results of this experiment and compares the three groups (Chomsky's children aged five to ten, the Corrective Readers, and the

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Insert Table 2 about here

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members of Fundamentals of English). In a 2 x 3 chi square comparison of the total correct and incorrect responses of the three groups, the observed differences between the groups were highly significant (χ^2 [2 df] = 39.3995, $p<.001$). In follow-up comparisons, the two groups of adolescents showed an observed difference which was highly significant (χ^2 [1 df] = 19.2269, $p<.001$), while the observed difference between Chomsky's group and the Corrective Readers was not significant (χ^2 [1 df] = 2.24, $p>.10$).

Another way of expressing the differences between the three groups is that 11 percent of Chomsky's group successfully comprehended all five constructions, 10 percent of the Corrective Readers, and 55 percent of the Fundamentals group. If we express the comprehension of at least four of the five constructions, the rates of success are 30 percent for the Chomsky group, 15 percent for the Corrective Readers, and 78 percent for the Fundamentals group.

DISCUSSION

Some results on specific constructions coincide with the research. Chomsky (1972) found that everyone over the age of 7.1 succeeded in comprehending the construction easy to see. Another study has corroborated that knowledge of this structure is consolidated by the age of nine (Kessel, 1970). Since all the ado-

lescents in this study also succeeded, the results would seem to be supported once more.

The exceptional construction ask is particularly interesting; therefore, several studies have been made of it. Kramer and others (1972) have indicated that competence in it increases until the ages of ten or twelve, after which age most, but never all, subjects may be expected to demonstrate competence: for every two competent adults there was one noncompetent adult, even in the college group. Also, there seems to be a significant and positive correlation between successful performance and IQ. These same researchers found that 55 percent of their ninth graders succeeded with ask; these ninth graders were white middle class children with IQ's ranging from 106 to 148. Kelleher (1973) compared thirty five children from regular school classes with eight children from classes for the mentally retarded (both groups aged four to nine). The latter had more difficulty comprehending this exceptional ask construction than the former. The present study would seem to fit in with the above results: 15 percent of the Corrective Readers succeeded and 77 percent of the Fundamentals class (as compared to 33 percent of Chomsky's children).

The present study is at variance with Chomsky's results (1972) in two respects. For her almost all the same children succeeded with ask and and; in the case of the Corrective Readers substantially more succeeded with and than with ask (75 percent as contrasted with 15 percent). The Fundamentals group was not so far apart: 91 percent succeeded with and, 77 percent with ask. In addition, Chomsky found a very neat developmental sequence in the acquisition of her five structures; divergence from this sequence of acquisition was extremely small. Children acquired easy to see first, then promise, followed by ask and and together, and finally although. Neither group of adolescents, however, exhibited such a neat developmental order. For instance, three Corrective Readers understood and but not promise or ask, eight understood and but not ask, one understood ask and and but not promise, and one understood both and and although but not ask. In the Fundamentals group three failed

promise but succeeded on one or more "subsequent" constructions, and four failed ask but understood one or more subsequent constructions.

The reasons why the adolescents did not show a systematic order of development are not clear. One consideration, however, might be in connection with periods of "instability in linguistic development" (Palermo and Molfese, 1972). One such period seems to occur between the ages of ten and thirteen years. During this time use of new grammatical constructions is increased and some kinds of constructions produce high error rates. It may be that this "instable" period extends further into adolescence than previously thought.

IMPLICATIONS

Although no absolute statistical conclusions are possible, the results of this study may indicate a low level of language development for disabled secondary readers. On a test of five complex linguistic structures, no significant difference in performance was observed between this group, aged fourteen to fifteen, and Chomsky's children aged five to ten. In contrast was the group of competent secondary readers whose number of correct responses was significantly greater than the number of correct responses of the disabled readers.

The difference between the two groups of adolescents becomes more interesting as we look again at Table 1. Only 30 percent of the parents of the Corrective Readers graduated from high school and 5 percent had some college; in contrast, all the parents of the Fundamentals group graduated from high school and 70 percent had education beyond high school (up through graduate school). If we look at parents' occupations, we see that only 35 percent of the parents of the Corrective Readers had jobs requiring various degrees of training; 82 percent of the parents of the Fundamentals group had this type of job.

The significance of this socioeconomic data becomes clear if we consider the connection between socioeconomic status and a child's level of language development. Chomsky (1972) found a correlation (significant at the .02 level) between socio-

economic status and linguistic stage. Stotsky (1975) cites a study showing the linguistic proficiency of middle-class adolescents as compared with their working-class counterparts. Loban (1976) offers clear evidence that proficiency in language accompanies affluence.

Sociolinguist Basil Bernstein provides insights into how socioeconomic status might affect language development (Bernstein, 1970; Olim, 1970). He has identified two language styles: the elaborated code used primarily by upper socioeconomic groups and the restricted code used primarily by lower groups. The parent using the elaborated code emphasizes language by making explicit and elaborating rules, reasons for the rules, and their consequences. Therefore the child begins to universalize as he understands the relationships between a particular act and general principles, reasons and consequences. The child becomes aware of more options for thought and action and begins to explore the environment in order to maximize comparison among possibilities. The language used in such cases involves greater differentiation in lexical choices, more grammatical options, and more modal verbs of uncertainty or possibility. On the other hand, the parent using a restricted code places less emphasis on language in controlling the child; he/she only deals with the particular act and does not relate it to general principles, reasons and consequences. The child is therefore tied to a given context and may not transcend it. He then deals with stereotypes and lacks exactness for precise conceptualization, differentiation and discrimination; information, alternatives and ideas are restricted as the appeals are to tradition and authority.

If, then, the disabled secondary reader suffers from a low level of language development, and if this low level of language development is caused, at least partly, by his exposure to a deprived language environment, the important question becomes how we can help him. There would seem to be two ways by which a student's gaps in language development might be filled: 1) daily exposure, by the teacher's oral reading, to good literature <u>in the original</u> (not adapted to a fourth grade

reading level) and 2) daily lessons in syntactical manipulation and sentence combining, including the use of language games. It can be hypothesized that strengthening the level of language development will also strengthen reading ability, since language is the basis of all cognitive development, including reading. It can further be hypothesized, based on psycholinguistic theory interrelating all parts of the language process, that such a program might also involve gains in students' writing ability, oral reading, listening ability, oral language ability, and self-confidence. Strengthening the disabled secondary reader's low level of language development is an area needing more investigation in order to offer further specific suggestions.

Table 1 Comparison of Adolescent Groups

Group	Corrective Reading	Fundamentals of English
Number	20	22
Ages	14.1-15.11	14.1-15.2
Reading Test (Gates-MacGinitie)		
Percentile (mean)		
vocabulary	9	68
comprehension	9	85
Grade equivalent (range)		
vocabulary	3.2-6.9	5.3-12.7+
comprehension	2.8-8.2	5.8-12.6+
Grade equivalent (mean)		
vocabulary	5.0	11.5
comprehension	4.9	12.6+
Parents' Education		
high school graduate	30%	100%
some college	5%	20%
college graduate	0	34%
graduate school	0	16%
Parents' Occupations		
unskilled laborer	50%	2%
skilled laborer	25%	11%
business executive	10%	41%
professional	0	30%
unemployed	15%	16%

Table 2 Observed Data of Three Groups

Group:	Chomsky		Corrective Reading		Fundamentals of English	
	passed	failed	passed	failed	passed	failed
easy to see	32 (89%)	4 (11%)	20 (100%)	0	22 (100%)	0
promise	23 (64%)	13 (36%)	15 (75%)	5 (25%)	19 (86%)	3 (14%)
ask	12 (33%)	24 (67%)	3 (15%)	17 (85%)	17 (77%)	5 (23%)
and	13 (36%)	23 (64%)	15 (75%)	5 (25%)	20 (91%)	2 (9%)
although	4 (11%)	32 (89%)	3 (15%)	17 (85%)	14 (64%)	8 (36%)
Total number in sample		36		20		22

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